

WHAT IS CLAIMED IS:

1. A recording/reproducing apparatus for an optical information recording medium having a plurality of recording layers, wherein the recording/reproducing apparatus comprises a plurality of optical heads provided on the same side with respect to the recording medium and the plurality of optical heads are assigned to reproduce information from or record information in different recording layers respectively.

2. The recording/reproducing apparatus according to claim 1, wherein the plurality of optical heads are positioned at almost the same radial positions with respect to the recording medium.

3. The recording/reproducing apparatus according to claim 2, wherein the plurality of optical heads are placed on a single carrier table.

4. The recording/reproducing apparatus according to claim 1, wherein optimum substrate thicknesses for minimizing spot diameters of lights that are irradiated onto the recording medium from the plurality of optical heads and then are focused through a substrate are different from one another.

5. The recording/reproducing apparatus according to claim 1, wherein information is reproduced from or recorded in the plurality of recording layers simultaneously using the plurality of optical heads.

6. A recording/reproducing apparatus for an optical information recording medium comprising an even number of recording layers provided with guide grooves for tracking formed spirally and address information, half of the recording layers having guide grooves formed in a reverse spiral direction to that of the other half,

wherein the apparatus comprises an even number of optical heads provided on the same side with respect to the recording medium, positions of a pair of optical heads are set so that a total of linear velocities at their respective positions on the recording medium is almost constant when a spindle motor is rotated at a constant rotation speed, and a reference clock for a recording signal is varied according to linear velocity so that almost constant recording density can be obtained.

7. A recording/reproducing apparatus for an optical information

recording medium with a plurality of recording layers,

wherein the apparatus comprises a single objective lens and a plurality of light sources and an optical path correction system is provided on an optical path unique to light irradiated from at least one of the plurality of light sources.

8. The recording/reproducing apparatus according to claim 7, wherein the optical path correction system is a liquid crystal device.

9. The recording/reproducing apparatus according to claim 7, wherein the optical path correction system is a lens.

10. The recording/reproducing apparatus according to claim 7, wherein wavelengths of lights irradiated from the plurality of light sources are different from one another.

11. The recording/reproducing apparatus according to claim 7, wherein using the plurality of light sources, information is reproduced from and recorded in the plurality of recording layers simultaneously.

12. An optical head for recording information in or reproducing information from an optical information recording medium having a plurality of recording layers,

wherein the optical head comprises a single objective lens and a plurality of light sources and an optical path correction system is provided on an optical path unique to light irradiated from at least one of the plurality of light sources.

13. The optical head according to claim 12, wherein the optical path correction system is a liquid crystal device.

14. The optical head according to claim 12, wherein the optical path correction system is a lens.

15. The optical head according to claim 12, wherein wavelengths of lights irradiated from the plurality of light sources are different from one another.